

REMARKS

The change in title is requested to shorten the title and to eliminate ambiguity which could easily caused confusion and/or misleading misinterpretation when the phrase ...STRINGED MUSICAL INSTRUMENTS WITH TONAL CHARACTERISTICS OF SINGLE COIL PICKUPS... is taken together.

The canceled claims have been rewritten in a clearer and more direct form with particular attention to definition of structure, to remedy unclear and indefinite claim language, e.g. predominantly "means plus function" in key claim elements, that is believed to have resulted in the previous claims being interpreted as excessively broad in scope.

The new claims 19-29 are believed to define the claimed invention as the different invention that it is, clearly distinguished from Blucher cited in the Rule 102(b) rejection.

In FIG. 2 and FIG. 4 of Blucher, assuming that bobbins 2, 2', 3 and 3' are of the usual electrical insulating material (and thus incorrectly hatched in the drawing), the sidewalls of plate 4 serve to intensify and shape the *permanent* magnetic fields engaging the strings. The tapered shape at one end of the sidewalls is the central point of invention in the Blucher patent. Blucher follows the standard practice of known art in hum-bucking pickups: utilizing *two identical coil bobbins* as shown in FIGS. 2 and 4; since conventionally it is assumed that the required number of turns in the two windings will be equal or nearly so. This makes the height twice that of a single coil

pickup so that, with standard full-sized bobbins, hum-bucking pickups, requiring two coils, are far too large to fit into the much smaller cutout of a single coil pickup guitar.

Another disadvantage of known art hum-bucking pickups such as Blucher is the degradation in signal strength and in tonal quality inherently introduced by the interconnection of the hum-bucking coil, whether connected in series or parallel, introduced as an extraneous element in the audio circuit that alters the frequency response adversely.

Known hum-bucking pickup designs in which the size of two like bobbins (and thus, of the cores and the permanent magnets) is scaled down sufficiently to enable the pickup to fit into the smaller cutouts, have had to accept even further degradation regarding output level, tonal response and or/noise performance, despite judicious juggling of the number of turns and wire sizes in the two coils in the two identical bobbins.

Consequently, many guitar players remain less than fully satisfied with the overall musical performance of known hum-bucking pickups, both full-sized and compact versions, compared to optimal single-coil pickups, to the extent that some musicians go out of their way to choose and utilize single-coil pickups despite their inherent tradeoff problem of susceptibility to hum interference, which, when it does occur, can often be minimized on site by strategic orientation of the instrument by the player.

These deficiencies have been addressed by the claimed invention by novel structure not found in Blucher or any other

prior art, i.e. the applicant's claimed flux transfer plates that, in addition to an upper portion flanking the pickup coil, are configured to extend seamlessly down through an offsetting mid-region to a lower region that extends down into the core region of the hum-bucking coil located beneath the pickup coil, making large area contact for tight magnetic coupling into the lower core-piece. These two essentially vertical plates, each extending seamlessly from the top to the bottom of the pickup assembly in a funnel configuration whose upper region is typically over six times greater in cross-sectional area than the lower region, The flux-funneling action forces the flux lines from the large upper total signal coil region to become highly intensifies the flux in the core region of the hum-bucking coil, resulting in fewer turns required for hum-bucking, thus (1) improving the tonal quality to become closer to that of single pickups, and (2) with a smaller hum-bucking coil and bobbin, opening up the potential of making a hum-bucking pickup small enough to fit into a single coil pickup cutout of an existing instrument while minimizing the above-described tradeoff tonal degradation of known art.

Blucher nowhere suggests applicants claimed flux transfer plates and smaller sized hum-bucking coils as disclosed (24 and 26, FIGs. 3 and 5) and claimed, instead showing plate 4 made as a single piece in a U shaped cross section with two sidewalls, and the conventional identical coil bobbins for the two like coils. In Blucher between plate 4 and magnet 11 in FIG. 2 and between

plate 4 and ferro-magnetic core 8 there are intervening seams that potentially form air gaps that, due the very small cross-sectional area, have a pronounced variable and detrimental effect on the distribution of hum flux lines, thus requiring conventional large structure and failing to provide the seamless structure, small size, improved tonal characteristics and other benefits of the claimed invention.

Blucher, addressing only pickup performance through permanent magnet flux linkage with the strings and teaches special manipulations thereof, fails to teach anything about hum-bucking apart from a general description under BACKGROUND OF THE INVENTION (col. 1 starting at line 33) concluding with the hum-bucking arrangement's "disadvantage of not producing a strong signal" and going on to explain the purpose of the two side walls as making the permanent magnet/string system more efficient to strengthen the signal (line 59) in mitigation of this disadvantage of Bluchers conventional hum-bucking system.

The Stich patent totally fails to address hum-bucking or hum-bucking pickups, disclosing essentially a single coil pickup with a "single continuous coil" as stated in the abstract, in claim 1 (col. 11, line 4), and shown schematically in Fig. 7. At col. 1, lines 58-65 Stich distinguishes his patent from hum-bucking, citing patent 2,199,584 (misprinted in the patent as 2, 199,534). Stich shows, teaches and claims only separating a portion of the continuous coil so as to create a parameter of mutual inductance for purposes of shaping the audio response for

tonal quality. Nowhere else in Stich is there found any teaching, showing or suggestion of hum-bucking or other cancellation effect. Thus, even in combination with Stich, Blucher fails to produce, enable, suggest, anticipate or render obvious the novel structure or advantages of the claimed invention.

The Examiner's reference to claim 16 of Stich in the paragraph at the top of page 6 in the OA is puzzling since Stich 5,789,691 has only 8 claims, and nothing relating to a "printed circuit board" or "...difference between an electrical signal..." is found in Stich. As to Stich merely showing the two different-sized coil portions: this alone in combination with Blucher fails to enable, teach, suggest or anticipate the claimed invention.

The smaller size of the hum-bucking coil in the claimed invention is not *merely a matter of design choice* or it would have been done in the millions of known hum-bucking pickups now in use, testifying to the here-to-fore accepted design principle and practice that the two coil bobbins had to be made identical in size for hum-bucking cancellation effect.

Applicant's new departure is made possible only as the fortuitous result of the primary point of invention, i.e. unusual effectiveness of the flux transfer from the unobvious structural innovation of extending the upper sidewalls seamlessly down into the hum-bucking core region to intensify flux in the hum-bucking core region, thus requiring fewer turns in the hum-bucking coil.

The Kinman patent 5,668,520, cited in Rule 103(a) rejection, totally fails to disclose, show, teach, claim or suggest anything

that could in any way be combined with Blucher to make or render obvious the claimed invention. Instead Kinman serves as a classic example of the prior art two-identical-coil philosophy and approach taken to the extreme by making the two coils identical not only in size, but in inductance (col. 5 line 32 "It is preferred that the inductance and impedance of the two coils be matched ..): clear evidence that, even combined with Blucher, there was absolutely no thought, intent, suggestion or anticipation of applicants novelty i.e. using transfer plates shaped to funnel flux lines into the hum-bucking core region to intensify the flux there so that the number of turns and thus the relative coil size could be reduced.

In further contradistinction, the point of the Kinman invention is a second identical U- shaped member 23 with sidewalls located on the outside of the hum-bucking coil 20 as a mirror image of sidewall member 42 above on pickup coil 30, thus making the two coil assemblies identical in every respect.

In further teaching away from the claimed invention, Kinman's structure requiring a seam between members 23 and 42 would tend to introduce an air gap, whereas the likelihood of such unwanted air gaps is eliminated by the seamless structure of applicant's flux transfer plates.

No support is found anywhere in Kinman for the Examiner's erroneous statement (top of page 7, OA) that the "second set of walls.... guide magnetic flux into a core of said Lower (sic) coil winding...". Given the upper/lower symmetry of Kinman how

does the Examiner reconcile the above statement with his statement on page 4 of the OA, Blucher's "...plate means...dividing... unwanted noise (flux lines) away from said upper coil..."? Would not the same identical plate means located identically outside the lower coil be expected to similarly divide the same unwanted noise (flux lines) away from the lower coil, and thus set up identical flux distribution in both the upper and lower coils?

Even this latter statement by the Examiner re the upper coil finds no support in Blucher which, as explained above, addresses only pickup performance, not hum-bucking, and fails to mention any purpose of the two side walls other than making the permanent magnet/string system more efficient to strengthen the signal (line 59) in mitigation of the disadvantage of loss introduced by hum-bucking.

The totality of the above discussions make it evident that the Blucher reference, or any combination thereof with Stich and/or Kinman, fails to disclose, show, claim, teach, or suggest anything leading from known art to the claimed invention, and that Blucher alone or in the hindsight combinations postulated in the OA would fail to enable the functions and advantages of the claimed invention

SUMMARY

In view of the above information it is believed that the differences between the claimed invention and the cited references taken separately or combined have been shown to be of such nature and extent that the claimed invention would not be anticipated under rule 102 or rendered obvious under rule 103 thereby or by any other known art, therefore the claims as amended define matter that is novel, unobvious and patentable.

ALLOWABLE SUBJECT MATTER

New claims 19-29 are now pending. It is believed that all issues raised by the Examiner have been addressed and remedied, that no new matter has been introduced, and that these claims, receiving full support from the specification and drawings, are in order for further examination and allowance. Such action is earnestly requested.

Payment of PTO Fee for RCE is enclosed herewith.

Respectfully submitted



by J. E. McTaggart

Agent for the Applicant

Registration No. 29,754

1860 Eastman Avenue, Suite 105

Ventura, CA 93003

Tel. 805 339 0456